

## CLUB REPEATERS

### VE3TBR

Phone: 767-7661  
Rx/Tx: 146.820/(-) MHz

### VE3YQT

Phone: 767-5492  
Rx/Tx: 147.060/(-) MHz

### VA3OLA

Rx/Tx: 53.050/(-) MHz

### VE3BGA

Rx/Tx: 145.450/(-) MHz

## WEEKLY BREAKFASTS

Saturdays 10:00 a.m.  
Blue Parrot Restaurant

### 2 METRE NET

Mondays 7:00 p.m.  
VE3YQT Repeater.

## NEXT MEETING



7:30 p.m., Room 207B  
Confederation College  
McIntyre Building

## RAC REPORT

Radio Amateurs of Canada has closed down its book store. The operation was not profitable with RAC incurring a loss on operations. We were competing with retailers who were already selling publications from such sources as ARRL and margins were not sufficient to sustain the operation. RAC will still be in the business of publishing Study Guides and Answer Banks along with other future publications. Study Guides and Answer Banks are available at Atlantic Ham Radio, Downsview; Bytown Marine Ltd., Nepean; Durham Radio Sales & Service, Oshawa; V.E. Communications and Electronics, St. Catharines. Radio Shack dealers across Canada stock the Basic Textbook and Repeater Maps & Directory. If a retailer in your area does not have the Study Guides ask them to contact RAC for information stocking them.

The International Amateur Radio Union is actively pursuing a reallocation to the 7 MHz band. Before the 1938 Cairo Conference, this 300 kHz was a world wide exclusive amateur allocation. In the time leading up to the Second World War the top portion of the band was made available for broadcasting outside of the Americas. It is anticipated that at WRC 97 the United States will propose the realignment of the 7 MHz band be added to the WRC

99 agenda. The proposal is to allocate 300 kHz to the Amateur Service at 6900-7200 kHz. The proposal has received a favorable reception from Broadcast interests in Region 2. The wheels of ITU turn slowly and this project has been in the works for a number of years. Don't expect instant results, the various players are now addressing this reallocation, we could see it pushed back to WRC 2001. A harmonizing of the band could see amateur use and modes of operation standardized in all three IARU Regions.

And of course we still have the LEOs looking for frequencies. Gates and company have revised their plans to having 288 satellites in orbit rather than the original proposal of 840. This is a 9 Billion dollar project. Iridium

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## 1996/1997 LARC

### Founding President

P.J. (Pat) O'Shea, VE3FW  
1881-1972

In honour of the memory of our founding president, Mr. P.J. (Pat) O'Shea, the club call sign is VE3FW.

### Senate

Bill Roberts, VE3ARN  
Keith Fiske, VE3JQ  
Bert Lambert, VE3BKY  
Ray Greer, VE3CH  
Hugh Elliott, VE3EDW  
Bill Klemacki, VE3AJ

### Executive Board

<b>President:</b> Ian Mellis, VA3RIM	577-1628
<b>Vice Pres:</b> Ed Baumann, VE3SNW	622-1216
<b>Secretary:</b> Norm Bell, VE3XRC	577-9316
<b>Treasurer:</b> John Watson, VE3GTx	683-3199
<b>Directors:</b> Judy LeFevre, VA3EAP	622-7920
Dave Horne, VA3DVE	344-9325
Don Bel, VA3DPB	473-5482
Rob Van Wyck, VE3FLB	344-7845
<b>Mem.Sec:</b> John Watson, VE3GTx	683-3199
<b>PastPres:</b> Terry. Stewardson, VE3TKA	577-9439
<b>HI-Q Ed:</b> Robert Mazur, VA3ROM	344-7731

### Thunder Bay Voyageur Award

The Lakehead Amateur Radio Club in cooperation with the City of Thunder Bay, sponsors the Voyageur Award. Any SWL, scanner listener or ham monitoring or working 5 Thunder Bay amateur radio stations qualifies. Send your log copy with dates, times, frequencies, call signs and \$2.00 to the Awards Manager at the club address below.

### Club and Newsletter Information

*HI-Q* is published by the Lakehead Amateur Radio Club, Inc., an Ontario registered non-profit corporation. The opinions expressed or implied in issues of *HI-Q* are those of the author. The LARC assumes no responsibility for the accuracy or the information submitted.

Material in *HI-Q* may be copied for non-profit use provided that credit is given to the source. Contributions related to amateur radio, especially those articles of interest to Northwestern Ontario amateurs are encouraged. Material can be submitted in WordPerfect® format or as a text file via fax: 807-345-2688, packet: VA3ROM@VE3TKA, voice mail: VE3TBR repeater user 159 or via email: rmazur@tbaytel.net. Send material or dated announcements no later than the 25th of the month that it is to appear.

To reduce costs, advertising at the following per issued rates is accepted: full-page—\$60.00, 1/2 page—\$40.00, 1/4 page—\$20.00 and 1/8 page—\$15.00. Reduced rates (1/3 off) are available upon receipt of advance payment for 10 issues (one full year). Send your ad copy and cheque (payable to the LARC) to the club address listed below. Advertising in *HI-Q* does not imply an endorsement or recommendation of the product or service.

LARC membership fees are set for the year as follows: regular—\$30.00, associate—\$20.00, associate (attending ham classes)—\$90.00, student (attending school full-time)—\$15.00 and family—\$30.00 plus \$10.00 for each additional family member living at the same address. *HI-Q* is sent to all LARC members but only one copy is mailed to each address.

### Mailing Address

The Lakehead Amateur Radio Club, Inc., Suite 184, 1100C Memorial Avenue, Thunder Bay, ON, P7B 4A3, Canada.

### Internet Home Page

Get your copy of *HI-Q* electronically at:  
<http://www.tbaytel.net/srobb/larc.htm>.

(RAC Report Continued from page 1)

Inc. will be putting 66 LEOs in orbit. The sky's are going to get crowded.

Effective June 1, 1997 until July 31, 1997 Thunder Bay amateurs and amateurs from the immediate surrounding regions will be able to use a special prefix in honour of the Canadian Scout Jamboree being held in Thunder Bay July 12, 1997 to July 20, 1997.

**VE3's may use CJ3  
VA3's may use CK3**

—73.

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email: pdoherty@tbaytel.net or at  
<[http://www.tbaytel.net/pdoherty/va3gd\\_hp.htm](http://www.tbaytel.net/pdoherty/va3gd_hp.htm)>

## LARC Public Service

Just back from our sojourn to southern Ontario in which we drove through a snowstorm on the way down and another on the way back. One wedding is over, now to prepare for the next one this fall. Understand three events have been completed so far this month, with the other happening this weekend.

Thanks to Norm VE3XRC, Ed VE3SNW, Terry VE3TKA, Bob VE3RVA and Wayne VA3WRL for the work on the Salvation Army Fund Drive. No information on what the weather was like, or how many participants were involved in the Royal LePage Run, however understand Carl VA3PEP, Glen VE3ICY, Ian VA3RIM and Dan VE3DWP assisted Norm VE3XRC in keeping things in order.

While we were driving through a

blinding snowstorm along the eastern end of Lake Superior, it appears the Legion 10 mile Road Race had fairly decent weather. Eleven operators were on hand to keep the flow going, namely VA3MOB Moe, VA3PP Pat, VE3DWP Dan, VE3RVA Bob, VA3PEP Carl, VA3RIM Ian, VE3XLB Linda, Archie VA3HWA and Norm VE3XRC.

While this is going to press, Hip Hip Hooray will be taking place with Eric VE3XET, Marion VE3MJN, Pat VA3PP and Jan VA3JRS assisting.

Next events are June 7th Walk For Hearts, Amateur Field Day the end of June, and the big event July 12th - 20th, CJ'97. Everyone have a good summer, if we get one, and will see you again in the fall.—73, Mike, VE3ZG.

## Sunspots and Climate

by Mike Flaughar, N9LLX,  
[flaughar@thepoint.net](mailto:flaughar@thepoint.net)

The subject is sunspots and solar interactions with Earth's climate/weather systems. First of all, I'm a ham radio operator and,

by profession, an electronic technician. I find the whole area of sunspots and earth-sun interaction absolutely fascinating. Anyone who reads this has surely heard of 11-year sunspot

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# Meeting Minutes

by Norm, VE3XRC

**Minutes of a Meeting of the Lakehead Amateur Radio Club held in Room 207B at Confederation College, Thunder Bay, Ontario on May 8, 1997.**

The meeting was called to order at 7:30 p.m. by the President VA3RIM, Ian Mellis with 31 members and guests in attendance.

## Minutes of the previous meeting:

The minutes of the previous meeting held April 10, 1997 were published in detail in the May edition of *HI-Q* and mailed to all members. **Motion:** moved by VE3BHN, Bob Gillespie and seconded by VE3RVA, Bob Hansen that the minutes be

accepted as published. **Carried.**

## Correspondence:

Letter from the VE3CNE Committee looking for volunteers to operate the VE3CNE station from Friday August 15 to Monday September 1 and/or a cash donation.

## Old Business:

**CJ'97:** VE3FLB, Rob Van Wyck stated that things are shaping up really well. The entire operation will be in the high school. We have had a great response for volunteers (approximately 20). RAC has the information for publication in the Canadian Amateur magazine.

**RAC Report:** VA3GD, Pat Doherty made it to Ottawa and back. One of the highlights of the

meeting was Canadian astronaut Bob Thirsk who was in attendance on the Saturday night. A note of interest, gas in Ottawa was 51.9 cents a litre.

**Repeater Maps:** VA3RIM stated that the executive had discussed the idea of purchasing a quantity of these maps that have been advertised in the Canadian Amateur. If the club is interested, Ian is looking for a volunteer to handle any possible orders. Following the meeting, Jamie Tocker (768-1271) volunteered his services.

**YQT Statistics:** VE3KRH, Steve Robb presented a table of statistics for VE3YQT which showed that for the first four months of 1997, the repeater was used for an monthly average of 52.6 hours, there were 16,410 keyups per month and there were an average of 44 autopatches made each month.

**Field Day:** VA3DPB, Don Bel stated field day will be held June 28 and 29. He has looked at a possible site on Highway 130 known as King George Park and VE3XRC, Norm Bell will see about getting permission for using this site. We will need at least one operating tent and one cooking tent. VE3AXL, Phil Moorey will donate some water. We will also need a generator.

**QRP Project:** VE3XT, Bill Unger stated that he has one unbuilt kit for viewing. They have been meeting at the College two nights a week to work on the rigs.

**Public Service Events:** VE3XET, Eric Todd is looking for volunteers May 25th at Lakehead University and June 7th at Confederation College.

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## Treasurer's Report: VE3GTX, John Watson

**Balance as of March 31, 1997:** **\$2,140.44**

<b>Income:</b> 50/50 Draw:	16.00	
Membership: student	75.00	<b>91.00</b>

<b>Expenses:</b> Thunder Bay Telephone	58.66	
Mail Boxes Etc.	132.24	
Mail Boxes Etc.	101.65	
Thunder Bay District EMO	1000.00	
T & S Radio	25.31	<b>(1,317.86)</b>

**Balance as of April 30, 1997** **\$913.58**

Note: the donation of \$75.00 shown above is compliments of the A-OKAY CAFE in Kakabeka Falls after VE3SNW, Ed Baumann did some work for them. If in Kakabeka Falls at coffee time, you know where to go.

**Motion:** moved by VA3JRS, Jan Sokoloski and seconded by VE3BHN, Bob Gillespie that the Treasurer's report be accepted. **Carried.**

(Meeting Minutes Continued from page 3)

**New Business:**

Antenna Season: as the snow is gone and spring has sprung, VE3AJ, Bill Klemacki did what now has become an annual tradition; he took out his trusty horn and with a resounding blast officially closed antenna season.

**50/50 Draw:** winner of the 50/50 draw was VE3KRH, Steve Robb.

**Adjournment:** moved by VE3XT,

Bill Unger and seconded by VE3RVA, Bob Hansen that the meeting be adjourned. **Carried.**

Following a short break, VE3XT, Bill Unger introduced VE3AXL, Phil Moorey, the evening's guest speaker. Phil stated that he has been messing around with antennas. He explained that after his wife had taken his vehicle with a hamstick mounted on it through a car wash, the hamstick was presented to him in several pieces.

As a result, he started playing around with winding coils read articles and built a Kakabeka Falls version of the Texas Bug Catcher. What he built was a mechanical monster. He then heard about the screwdriver antenna and started collecting the necessary bits and pieces. He described the parts and how through experimentation he now has a good antenna that is cheap, simple and fun to build.

## NOTICE

After nearly 3 years, and 26 issues, this editor is in need of a break. I've folded, stuffed and sealed over 3,000 newsletters. The next 12 months will find me in constant training with the Coast Guard which means less time to devote to other pursuits. This is an appropriate time to change the editors since the Club will have all summer to find a replacement.

It has been an interesting and enjoyable 3 years. I would like to especially thank these hams who have supported this editor over the years: Dave, VE3AVS; Pat, VA3GD; Mike, VE3ZG; Skip, VE3BBS; Norm, VE3XRC; Gary, ex-VA2CK; Randy, VA3GOT; Ian, VA3RIM; Jim, VE3UA. I've missed a few names but the old gray matter ain't what she used to be.

The LARC was one of the first clubs, in North America, to publish and distribute an electronic PDF newsletter via email and a World Wide Web page. *HI-Q* is an award winning ARNS newsletter and is distributed over the world thanks to the Internet.

In this issue, are 3 articles concerning the Sun. Please take the time to read them and maybe you'll be interested in doing some research and experiments with the Internet references provided. For nearly 2,000 years, the laws of Aristotle were unquestioned; we believed that heavier objects fell to the ground faster than lighter ones; we believed that the Sun went around the Earth and that the Earth was centre of the Universe. Copernicus put us in our "proper" place in the Universe and when Galileo gazed at the heavens with his crude telescope and saw the "blemishes" on the face of the Sun he shattered the myth of the unchanging and stable nature of the star we call Sol. I hope you enjoy the articles.

As Omar Khayam wrote, "... *the pen, having writ, moves on...*" Enjoy the summer of CJ'97.—73, Bob, VA3ROM.

# The Solar “Cycle” Myth

Astronomer J.A. Eddy of the High Altitude Observatory, in Boulder Colorado has done research that supports the belief of two 19th century physicists that there have been at least two long periods of very low solar activity since the dawn of human history. Plots of solar activity that go back centuries before the invention of the telescope have been calculated.

## The Maunder Minimum

E.W. Maunder, of the Greenwich Solar Observatory picked up on the work of German astronomer Gustav Spörer. They both studied the historical records and concluded that there had been a remarkable lack of solar activity in a 70-year period beginning about 1645 and a 90-year one beginning in about 1460. In 1894, Maunder published more details indicating that to accept this evidence was to admit that the solar cycle and the sun itself had changed markedly in historic time and could again.

## Eddy's Research

In his 1976 paper, Eddy surveys a mass of evident from before and since Maunder's time, adding modern touches such as use of carbon-14 data to bolster man's observed records. The C14 data match the two solar minima and unexpectedly indicate eras of exceptionally high solar activity in the 12th and early 13th centuries. This maximum also appears, though more vaguely, in natural and historical records. **All sources raise questions about the validity of the “11-year cycle” as a regular or permanent feature of the sun.**

## Solar Observations over 365 Years

After Galileo, in 1611, first observed sunspots on the sun's surface with the telescope, many famous astronomers were active in the 17th century. Sunspots were thought to be clouds and were not considered to be important. New sunspot sightings during this period were rare that sightings were reported in scientific papers as discoveries.

## Effect on Aurora Sightings

Because the number, intensity, and geographical distribution of auroras correlate well with solar activity, auroral records dating back to before the Christian era provide some long-term historical indication of relative solar activity. Agnes M. Clerke wrote, “strong though indirect evidence that the ‘prolonged sunspot minimum’ was attended by a profound magnetic calm.” Records show that there were far fewer auroras recorded during the Maunder Minimum than in the 70-year periods before and after. There were only 77 auroras reported and in 37 of those 70 years there were none at all!!

Edmund Halley saw his first aurora in 1716, after the Maunder Minimum. He was then 61 and had waited most of his life to observe one. He was so impressed that he wrote a classic paper on his observations. *In fact, Halley saw more comets in his lifetime than he did aurora. Which is another story.*

After 1750, there is an auroral “turn-on” after the Maunder Minimum. There are 6126 auroral reports for the 18th century and almost as many for the 19th.

## Carbon-14 and the History of the Sun

Modern confirmation of the Maunder Minimum and other long-term solar-activity anomalies is found in the carbon-14 record of tree rings. When carbon dioxide is assimilated into living matter (in this case, trees) the radioactive isotopes of carbon begin spontaneous disintegration at well-known rates. The isotopes are formed continuously in the atmosphere by cosmic rays and the level of cosmic rays entering the atmosphere is modulated by solar activity. When the sun is quiet carbon-14 content rises, and it is lower in times of high solar activity.

Carbon-14 tests have shown that there have are three clear solar anomalies in the last 1000 years: The Maunder Minimum, the earlier one (Eddy suggests that it be called the Spörer Minimum) between 1460 and 1550, and a long high one in the 12th and early 13th centuries. Eddy calls this high a “Grand Maximum.” Eddy suggests in his 1976 paper that we are heading for another Grand Maximum in the 21st century.

## Solar Corona at Eclipse

Historical accounts of the appearance of the solar corona during eclipse of the sun offer another possible check on past solar behaviour, since the shape of the corona varies with solar activity. Coronal streamers seen at times of high sunspot activity are believed to be rooted in concentrated magnetic fields on the sun's surface, associated with sunspots. When the spots fade, so

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(The Solar "Cycle" Myth from page 5)

does the corona. With low solar activity the corona is mainly zodiacal light (false corona), the result of scattering by dust and other matter in space.

Of 63 solar eclipses during the Maunder Minimum, only 8 passed through parts of Europe where astronomers were at their daily work, and only a few reach totality near any permanent observatory. The three best observed were in 1706, 1708 and 1715, when the sunspots had begun their return.

Descriptions of the corona where found in connection with eclipses of 1652, 1698, 1706 and 1715. Every account except for that of 1715 is consistent with what zodiacal light would look like in the absence of true corona. Very limited in extent, dull or mournful often reddish. None of the first three described coronal structure or mentioned the streamers which are seen so readily by the naked eye in times

of appreciable sunspot activity.

By the eclipse of 1715, the last in the Maunder Minimum, the annual sunspot number had reached 26, and was rising. The corona was fairly well described, and for the first time, drawings were made of it. Also, for the first time, coronal structures were mentioned. Eddy adds: "It thus seems to me probable that through much of the long period of the Maunder and Spörer Minima, the sun was at such a minimum activity that the true corona as we know it today was severely thinned or absent altogether. The same may be true of the longer span before 1400 and, for other reasons, may apply to the prolonged maximum of the 12th and 13th centuries. **"We have only a few thousand years of records but it may be that the corona, as we know it, is a modern feature of the sun. It's an interesting question and challenge for historians."**

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# Ham Puzzler

by Dave, VE3AVS

*There will be no puzzler till next September. The brains behind these things are in need of a rest. Hopefully, Dave and Randy will return in fine form next fall.*

Here are the answers from last month's puzzler.

**VE3GTX** = 'MONEY MAN'

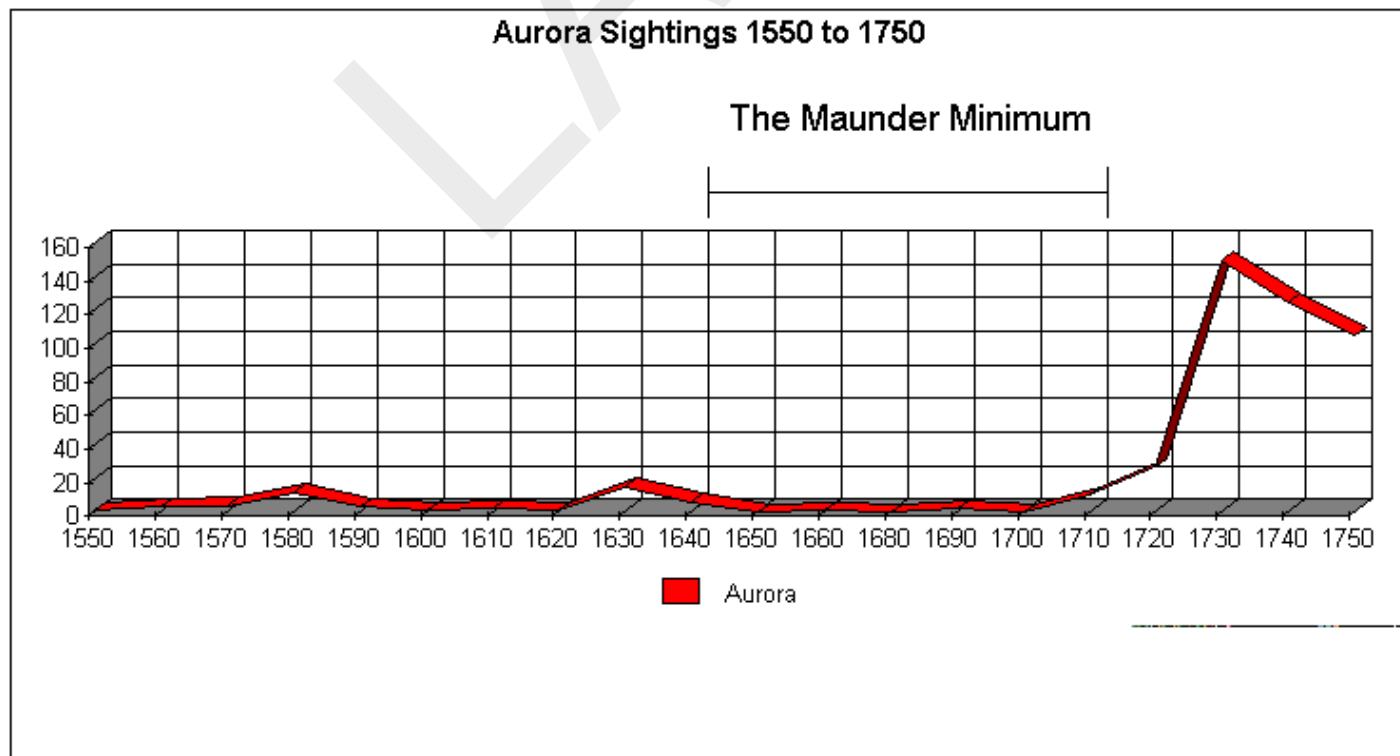
**DEONA** = ANODE

**REEKY** = KEYER

**GNOAAL** = ANALOG

**GHMMOE** = MEGOHM

Have a happy and safe summer. The Ham Puzzler will return for your pleasure next September. —73, Dave, VE3AVS



# Using 10.7cm Flux Data

In our recent poll of the user community regarding how our 10.7cm flux data are used, we had a number of replies from schools. We were very interested to find out that the data are used in general scientific and in environmental studies.

The 10.7cm flux is an acceptable proxy for solar energy output, ultraviolet flux, soft X-ray flux, sunspot number and area, and total magnetic flux. Students are using the flux values to follow solar rotation and the time cycles of solar activity, and comparing solar activity with global and local weather conditions and other environmental observations.

Longer-term patterns (up to 50 years) are compared with tree rings, agricultural records and other historical data. The quality of the data which makes it attractive for student projects that it is current. Daily measurements are promptly distributed and added to the data base.

We welcome inquiries from

teachers or students using the data and reports on their investigations.

## Using the 10.7cm Flux as a Proxy for Sunspot Number

Sunspot number is a widely-used index of solar activity. Using more than 40 years of data, we have found the empirical relationship below is useful in using the 10.7cm flux values as a proxy for sunspot number:

$$N = (1.14) * S - 73.21$$

where S is the solar flux (density) value in solar flux units. Solar flux is measured in Janskys or ( $10^{-22}$  Watts)( $m^{-2}$ )( $Hz^{-1}$ ).

Since the 10.7cm flux is a more objective measurement, and always measured on the same instruments, this proxy "sunspot number" should have a similar behaviour but smaller intrinsic scatter than the true sunspot number. Ken Tapping,

<http://www.drao.nrc.ca/>

(The Solar "Cycle" Myth from page 6)

## Summary and Conclusions

Eddy concludes from the evidence that the long sunspot minimum was as real feature of the solar history. He challenges the Wolf sunspot data for the first 50 years of the 17th century. Saying that Wolf did not have confidence in the data available for those years. Wolf had intended to prove, for a longer period, the sunspot periodicity, discovered earlier by Schwabe, who is credited with originating the sunspot solar cycle concept. **Wolf explained that, where data were sparse, he assumed the continued operation of the 11.11-year cycle.**

## Conclusion

Eddy concludes, "There is good evidence that within the last millennium the sun has been both considerably less active, and probably more active, than in the last 250 years. This opens the possibility of long-term changes in the flow of atomic particles from the sun, with other inevitable terrestrial effects..." The reality of the Maunder Minimum and its implication of basic solar change may be but one more defeat in our long-losing battle to keep the sun perfect, and if not perfect, constant, and if inconstant, regular. Why the sun should be any of these things, when other stars are not, is probably more of a question for social rather than for physical science."

*Reprinted from QST, July 1976, pgs. 24-26, by permission of the ARRL. Copyright 1976. All Rights Reserved.—Ed.*

# Thunder in the Air '97

Due to the success of last year's Air Show, the City of Thunder Bay will once again be presenting **THUNDER IN THE AIR '97** to be held on Friday night, September 5th, Saturday September 6th and Sunday September 7th, 1997.

We have booked 5 different air acts from last year and the committee is presently working on the ground displays. The Friday night show will feature **"CAPTAIN LAZER AND THE BATTLE FOR ZENDA,"** the only forward launched pyrotechnics on

the airshow circuit today. Using colourful rockets and up to 800 special pyrotechnic effects, "Captain Lazer" brings the battle to the showline.

As part of the communications for Thunder In The Air '97, I am looking for volunteers from the ranks of the local amateur radio fraternity.

If you are interested in helping out, I will have volunteer forms available at the June meeting or you can call me on VE3YQT or 577-9316. 73—Norman Bell, VE3XRC.

(Continued from page 2)

cycles. By from what I'm been reading, researchers now seem pretty sure that two of these cycles are each half of a 22-year solar magnetic cycle. The sun is in effect like a huge dipole with a more or less regular oscillation period. During solar minimum years we can even measure the amount of solar flux seen in coronal holes and activity below the sun's surface and make rough judgments about the strength of the upcoming cycle, rather like measuring the charge current on a coil then estimating its fully-charged voltage 90-degrees later.

A very interesting paper on this phenomena and the new "solar dynamo" theory has been put out by scientists from NASA Goddard Space Flight Center and Yale University (Schatten, Myers, and Sofia). Their paper is still in scientific journals (not the mass media) but you can see the reference to it from the American Geophysical Union at [http://www.agu.org/pubs/gl\\_23\\_6.html](http://www.agu.org/pubs/gl_23_6.html).

Climatic records suggest what some climatologists have long believed—that Earth goes through regular periods of scrambled weather patterns about every 160 to 200 years. Some of the more potent periods in the past may have played a part in historic events such as mass migrations and even the demise of civilizations. Consider the Anastazi Indians who fell to the droughts of the 13th century in America, or the Harappan culture in India which was weakened by severe flooding before 1500 BC then subjected to invaders from the Steppes who fled crop failures and shrinking animal herds.

Obviously we do not have direct correlation between sunspot cycle

intensity and climate changes of the past. We do see declined cycles in the early 1800's and also during the Maunder Minimum, but to go further back we need something like a correlation between sunspots (solar output) and isotope (carbon and iridium) concentrations.

Unfortunately, there appear to be many in the scientific community who resent this new science because of damage it might do to accepted understandings. Of course I'm speaking of environmentalists who, through perhaps through no fault of their own, have devised the formulas which have brought the fear of global warming. A good many of these formulae assume the sun to be a constant; a fixed value. To accept solar variability would be to have to re-work the formulas and, perhaps, lose the proof that man is causing global warming.

Solar intensities have been increasing for the last 200 years and indeed seem to continually increase between periods of solar quiescence. For a look at how many organizations are involved in global climate change, check out <http://www.worldcorp.com/dc-online/gcc/science.html>

Since about mid-1994, it seems that solar output has been dropping and Earth's weather has been affected. I also believe there must be some connection between solar levels and the unexpected cooling of surface water temperatures in the equatorial Pacific which has been at least partly responsible for the strange storm tracks of late and so many record highs, lows, floods, and droughts worldwide. *The National Climate Prediction Center has predicted the start of warming anomalies this year while at the*

*same time their latest and greatest computer model LDE02 actually predicts continued cooling. That model as of now is being officially "ignored" because the older three are in agreement.* To find out more about El Nino/Southern Oscillation and North Atlantic Blocking, try <http://www.pmel.noaa.gov/toga-tao/el-nino/home.html>.

One group that seems certain that our sun is indeed variable is the H-K Project at Mt. Wilson Observatory at [http://www.mtwilson.edu/Science/HK\\_Project/](http://www.mtwilson.edu/Science/HK_Project/). Visit their site and click on "Extra-Cyclic Activity." Their observations of other stars of similar class to our own indicate that most if not all go into periods of relative quiescence and then return to normal. The statistics suggest that our sun, if it is normal, should spend about 1/4 of it's time at a lower output state than we've known these past two centuries. The Carbon-14 record seems to bear this out.

There are certainly varied opinions about what cycle 23 will be like, more that I've ever noticed before. If cycle 23 is the downturn into a solar minimum event, we will not know for certain until we see at least the next cycle, number 24, which won't begin until 2008 or so. And if the carbon-14 record is to be believed, the actual climate deterioration will progress gradually for perhaps 30 years as in the early 1800's, or even up to 80 years as during the Maunder Minimum or 100+ years as during the Spörer Minimum. I cite these figures based on when Carbon-14 concentrations made a general downturn until they hit bottom and turned upward again.

*From the Ham Radio News web page.—Ed.*